measurers was 0.816 ($p < 0.0001$). Cost/QALY exceeded cost/life-year in 61% of cases whereas cost/life-year exceeded cost/QALY in 39% of cases. In 124 (84%) of comparisons, both cost/QALY and cost/life-year ratios were below a pre-specified threshold (e.g., $50,000 per QALY or life-year). In 14 (10%) of cases, adjusting for quality of life resulted in a ratio that crossed the $50,000 value, whereas in 4(3%) the cost/QALY ratio crossed the $100,000 threshold. **CONCLUSIONS:** Adjusting life years for HRQL does not substantively affect cost per life year ratios for the vast majority of published cancer interventions in our sample. The results suggest that the method used for quality adjusting or even quality adjusting at all may not matter for cost-effectiveness analyses of life saving cancer interventions. The results could differ for cancer interventions that have large impacts on patients' HRQoL.

CN2

ECONOMIC EVALUATION OF THE CHEK2 GENOTYPING AND PERSONALIZED BREAST CANCER SCREENING IN THE POLISH HEALTH CARE SYSTEM

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OBJECTIVES: The assessment of economic implications, both for individualized breast cancer (BC) prevention and for public health policy, of findings concerning the risk of BC cancer in women with CHEK2 heterozygosity. **METHODS:** Cost-effectiveness analysis of genotyping every women at CHEK2 and offering—on the basis of her BC risk profile—a personalized screening programme in which the starting age would vary, versus present strategy, was perfomed using modelling technique. Two scenarios were compared: (A) DNA CHEK2 test in all women, screening strategy beginning at 25 years of age only in CHEK2-positive women (1.2%) and standard screening strategy (beginning at 50 years) in the remained population; (B) without DNA CHEK2 test, in all women standard screening strategy. Data on life expectancy, BC risk, efficacy of screening strategy and medical costs were obtained from published literatures. The cohort simulation started with 25-year-old women and projected direct medical costs and outcomes over patients lifetimes. Effectiveness was measured as life years gained (LYG). Only direct medical costs (BC screening and treatment) were included, assessed from health care payer perspective and reported in PLN (1 EUR = 4.5 PLN in 2009). 5% and 3.5% discount rate was used for cost and effectiveness, respectively. **RESULTS:** The total lifetime costs/patient were estimated to be 2223.85 PLN (discounted: 644.84 PLN) in (A) and 1998.20 PLN (discounted: 430.15 PLN) in (B). The total LYG generated with scenario (A) were 50.958 vs. 50,939 with scenario (B) (without discounting) and 23,170 vs. 23,165 (discounted), respectively. This results in ICER for (A) of 11,862 PLN/LYG (without discounting) and 41,865 PLN/LYG (discounted). Results were robust to sensitivity analyses. **CONCLUSIONS:** The use of CHEK2genotyping and pesonalized BC screening improves survival compared to standard strategy and considering the suggested threshold for cost-effectiveness in Poland (80,000 PLN/LYG in 2008), is cost-effective in the Polish health care system.

CN3

COST-EFFECTIVENESS OF SORAFENIB IN UNRESECTABLE AND/OR METASTATIC RENAL CELL CARCINOMA IN TURKEY

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OBJECTIVES: Sorafenib is an oral multi-kinase inhibitor that targets tumour cell proliferation and tumour angiogenesis. In the TARGET study (phase III trial), sorafenib plus best supportive care (BSC) significantly prolonged progression-free survival (PFS) compared with BSC alone in patients with unresectable and/or metastatic renal cell carcinoma (mRCC). The objective of this study was to assess the cost-effectiveness of sorafenib plus BSC versus BSC alone in mRCC patients in Turkey. The study was undertaken from a Turkish health care payer perspective. **METHODS:** A Markov model was developed to estimate costs and outcomes associated with sorafenib + BSC and BSC alone. The model tracked patients with mRCC through three health states: PFS, disease progression and death. PFS and survival were extrapolated based on patient level trial data (TARGET) over a patients' lifetime. Health effects were expressed as life years gained (LYG). Incidence of adverse events (AEs) were also obtained from TARGET. Resource utilization data were obtained via expert clinical opinion and included physician visits, hospitalizations, monitoring, treatment of AEs, etc. Unit costs were taken from the Social Security Institution's official price list. Costs and effects were evaluated over a lifetime and discounted at 3%. Results were presented as incremental cost/LYG. Deterministic and probabilistic sensitivity analyses were also conducted. **RESULTS:** The incremental survival benefit with sorafenib was 1.269 LYG. The lifetime cost per patient was 4,080 TL for BSC and 47,665 TL for sorafenib + BSC. The incremental cost-effectiveness ratio of sorafenib + BSC was 34,342 TL per LYG compared with BSC alone. Sensitivity analyses confirmed the robustness of the model results. **CONCLUSIONS:** Compared with BSC alone, sorafenib + BSC is a cost-effective therapy option in the treatment of unresectable and/or metastatic renal cell carcinoma (mRCC) patients in Turkey.

CN4

COST-EFFECTIVENESS OF PEMETREXED IN FIRST LINE TREATMENT OF NON-SMALL CELL LUNG CANCER IN PORTUGAL

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OBJECTIVES: To compare costs and health benefits of two therapeutic options for the first line treatment of chemotherapy naïve patients with locally advanced or metastatic non-small cell lung cancer (NSCLC)—gemcitabin/cisplatin versus pemetrexed/cisplatin. **METHODS:** A lifetime 3-week cycle Markov model was developed and adapted for Portugal in order to estimate costs per life year (LY) and per quality adjusted life year (QALY) gained for patients with adenocarcinoma and large cell carcinoma histology. The model considers three disease states—stable, response, progression—and two treatment phases—during and after first line treatment. Patients may suffer from adverse events such as neutropenia and febrile neutropenia; fatigue; diarrhoea; nausea and vomiting; bleeding; anaemia; and thrombocytopenia. The clinical inputs to the economic model were obtained from phase 3 pivotal trial. Direct medical costs were estimated according to both the Society's and the NHS perspectives. A Delphi panel was conducted in order to estimate resource consumption. Unit costs were derived from official sources. **RESULTS:** Patients treated with pemetrexed have a discounted expected LY 1.226 compared to 1.104 of those treated with gemcitabine. Due to the low quality of life of the population considered, QALY are 0.655 and 0.595, respectively. Incremental costs with pemetrexed are below €3,900 for both perspectives due to its higher price and to a larger consumption of best supportive care. Therefore, the incremental cost per LY gained is €31,154 for the Society (€63,859 per QALY) and €30,950€ for the NHS (€63,441€ per QALY). Sensitivity analysis shows that these findings are only affected by the assumptions adopted on the mean body surface area, drug wastage and overall survival. **CONCLUSIONS:** The incremental cost per LY of pemetrexed is acceptable. However, the incremental cost per QALY is higher than usual thresholds due to the low basal quality of life of the population.

PODIUM SESSION I: IMPACT OF DRUG EXPENDITURE CONTROL

(For DE1 see page A342)

DE1

DE2

INFLUENCE OF GENERIC DRUGS ON PROTON PUMP INHIBITOR PRESCRIPTION IN PRIMARY CARE

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OBJECTIVES: The aim of this study is to evaluate general practitioners' prescription (GPs) of different Proton Pump Inhibitors (PPIs) in the period between 2005 to 2008. **METHODS:** Analysis has been performed on a database of 99 medical practitioners that have managed an average of 150.000 inhabitants. We evaluate the PPIs prescriptions from January 2005 to December 2008. Evaluations performed are the following: 1) PPI prescription (total and separately for lansoprazole, esomeprazole, pantoprazole, rabeprazole, and omeprazole); 2) prevalence of the reimbursement purpose (Gastro-protection—G; Acid-Related Disease—ARD); 3) prevalence of patients with ARD categorized on the basis of PPI prescriptions as drugs box/year (1–3 short treatment—ST; 4–11 long treatment—LT; >12 very long treatment—VLT). Data were expressed as Compound Annual Growth Rate (CAGR). **RESULTS:** The total volume of PPI's prescribing increased progressively over the 4 years (CAGR +15%). The growth for each molecule was: L +42%; E +11%; P +16; R +3%; O 1%. The reimbursement purpose was significantly higher for G (CAGR +41%) than for ARD (CAGR +6%; $p < 0.01$). We found an increase of ARD patients with VLT with a significant highest CAGR (ST +3.9%, LT +4.8%, VLT +7.4%; $p < 0.01$). PPI prescription showed a highest CAGR for L in all patients (27%), while the lowest one was for O in VLT patients (-9%). **CONCLUSIONS:** Generic PPIs has unexpectedly increased the prescription of whole drug class during the period 2005–2008. We observed a marked increase in a very long duration PPI treatment for ARD that caused a relevant resource consumption. Our data suggest that the appropriateness of PPI prescription after generic PPI introduction should be carefully monitored to distinguish between cost-effective from cost-ineffective PPI treatment.

DE3

HAVE RECENT PHARMACEUTICAL REFORMS DAMAGED R&D?

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OBJECTIVES: To estimate the impact of cost-containment reforms on R&D indicators of pharmaceutical firms in eight countries and draw policy recommendations. **METHODS:** The average treatment effect on the treated is econometrically estimated with difference-in-difference (DiD); before-after comparisons; DiD with correlated random trend and a synthetic control group; kernel and nearest neighbour matching DiD methods. **RESULTS:** This study estimates short-term effects of recent regulatory changes in public health care on financial indicators related to pharmaceutical R&D in Denmark, France, Germany, Italy, Japan, Norway, Sweden, and the US. The dataset represents a panel of financial statements of 1306 pharmaceutical firms for the period 1997–2007. The evaluated indicators include R&D expenditure, R&D expenditure to total revenue, cash flow, gross margin, and price-to-book ratio. The national pharmaceutical expenditures, population, availability of credit for the private sector,